

**MAINE MEDICAL CENTER
CUMBERLAND COUNTY
PORTLAND, ME
A-431-71-G-M/R**

**) Departmental
) Findings of Fact and Order
) Air Emission License
)**

After review of the air emissions license amendment application, staff investigation reports and other documents in the applicant's file in the Bureau of Air Quality, pursuant to 38 M.R.S.A., Section 344 and Section 590, the Department finds the following facts:

I. REGISTRATION

A. Introduction

Maine Medical Center (MMC) of Portland, Maine has applied to renew their Air Emission License permitting the operation of emission sources associated with their health care facility.

MMC has also requested a minor revision to their license in order to update maximum heat input capacities for Boilers #1 through # 3. The heat input capacity for Boiler #4 will remain the same.

B. Emission Equipment

MMC is authorized to operate the following equipment:

Fuel Burning Equipment

<u>Equipment</u>	<u>Maximum Capacity (MMBtu/hr)</u>	<u>Maximum Firing Rate (gal/hr) *</u>	<u>Fuel Type, % sulfur</u>	<u>Stack #</u>
Boiler # 1	43.8	313	Fuel Oil, 0.46% or Natural Gas	2
Boiler # 2	25.0	179	Fuel Oil, 0.46% or Natural Gas	2
Boiler # 3	37.5	268	Fuel Oil, 0.46% or Natural Gas	2
Boiler # 4	25.1	180	Fuel Oil, 0.46% or Natural Gas	2

* Based on the Firing of # 2 Fuel Oil, 0.46%S and an oil heat content of 140000 Btu/hr

Electrical Generation Equipment

<u>Equipment</u>	<u>Power Output (kW)</u>	<u>Firing Rate (gal/hr)</u>	<u>Stack #</u>
Boiler Room Generator	300	21.2	3
LL Bean Wing #1 and #2 (each)	460	32.8	4
Fire Pump Generator	135	9.5	5
NDF # 1 and # 2 (each)	450	32.1	6
Computer Room Generator	250	17.5	7
Generator # 7	1250	84	8

C. Application Classification

The application for MMC includes a minor revision as well as a renewal. The heat input values for Boiler #1 through #3 in the current air emission license were derived from the maximum steam output rating for each boiler; however, the heat input values are incorrect since they are calculated based on the assumption of 100% boiler efficiency. While actual boiler efficiency will vary based on load and other factors, MMC proposes to correct the heat input values by 20%, which would reflect average boiler efficiencies of 80%. The request to increase the maximum heat input for Boilers #1 through #3 by 20% does not involve an increase in the combined annual emission caps. The hourly emission limits from all boilers will remain the same. Therefore this application has been processed as a renewal with a minor revision.

II. BEST PRACTICAL TREATMENT (BPT)

A. Introduction

In order to receive a license the applicant must control emissions from each unit to a level considered by the Department to represent Best Practical Treatment (BPT), as defined in Chapter 100 of the Air Regulations. Separate control requirement categories exist for new and existing equipment as well as for those sources located in designated non-attainment areas.

BPT for existing emissions equipment means that method which controls or reduces emissions to the lowest possible level considering:

- the existing state of technology;
- the effectiveness of available alternatives for reducing emission from the source being considered; and
- the economic feasibility for the type of establishment involved.

Before proceeding with the control requirements for each unit a general process description is provided to identify where the equipment fits into the process.

B. Boiler Emission Sources

MMC operates four boilers that supply steam to heat the facility, the dryers in the laundry operation and the autoclave cleaning equipment at its health facility in Portland, ME. Emissions from Boiler #1, #2, and #3 are not controlled by pollution control equipment. Boiler #4 was fitted with flue gas recirculation (FGR) at the time of its installation in 1997 to be operated only when firing natural gas. Accordingly, NO_x emissions from Boiler #4 are receiving BPT when firing natural gas since the FGR system was installed less than 15 years prior to the date of this license renewal.

Boiler #1 has a maximum design heat input of 43.8 MMBtu/hr and fires fuel oil with a sulfur content not to exceed 0.46% by weight or fires natural gas. It was manufactured by Babcock and Wilcox in 1974, and is therefore not subject to EPA New Source Performance Standards (NSPS) Subpart Dc, for boilers with a heat input of 10MMbtu/hr or greater and manufactured after June 9, 1989.

Boiler #2 has a maximum design heat input of 25.0 MMBtu/hr and fires fuel oil with a sulfur content not to exceed 0.46% by weight or fires natural gas. It was manufactured by Bigelow Boilers in 1954, and is therefore not subject to EPA New Source Performance Standards (NSPS) Subpart Dc, for boilers with a heat input of 10MMbtu/hr or greater and manufactured after June 9, 1989.

Boiler #3 has a maximum design heat input of 37.5 MMBtu/hr and fires fuel oil with a sulfur content not to exceed 0.46% by weight or fires natural gas. It was manufactured by Babcock and Wilcox in 1967, and is therefore not subject to EPA New Source Performance Standards (NSPS) Subpart Dc, for boilers with a heat input of 10MMbtu/hr or greater and manufactured after June 9, 1989.

Boiler #4 has a maximum design heat input of 25.1 MMBtu/hr and fires fuel oil with a sulfur content not to exceed 0.46% by weight or fires natural gas. It was manufactured by Kewanee Boilers in 1997, and is therefore subject to EPA New

Source Performance Standards (NSPS) Subpart Dc, for boilers with a heat input of 10MMBtu/hr or greater and manufactured after June 9, 1989.

The four boilers fire fuel oil with a sulfur content not to exceed 0.46% by weight and natural gas. The low sulfur content of these fuels is considered BPT for SO₂.

MMC is in the process of upgrading its boiler control room with a state-of-the-art automated combustion control system, which allows for monitoring of steam pressure, fuel flows, and drum levels. For Boilers # 1 and # 3, which are typically operated in a swing load capacity, this upgrade includes automated variable frequency drives to replace the constant speed fan motors and dampers. Also, for Boilers # 1 and 3, the upgrade included automated oxygen sensors with feedback control (O₂ trim) to maintain excess oxygen at its optimum level. In addition, Boiler #2 was retubed in the fall of 2000. Together, these upgrades allow control room personnel to operate the variable load boilers (#1 and #3) and the base load boilers (#2 and #4) more efficiently, minimizing fuel use and therefore emissions of the criteria pollutants.

Establishing Emission Limits for Boilers #1 through #4

The particulate emission limits for boilers #1 through #4 are dictated by Chapter 103 when firing low sulfur fuel oil and BPT when firing natural gas. For PM, the emission limit for boilers #1 through #3 when firing fuel oil is 0.2 lb/MMBtu, and for boiler #4, 0.12 lb/MMBtu. When firing natural gas, the PM emission limit for all boilers is 0.1 lb/MMBtu. All lb/hour limits are based on the combined firing rate of 110.1 MMBtu/hr that was modeled for license number A-431-71-A-R issued on July 9, 1996. The resulting lb/hour limits for the stack serving boilers #1 through #4 are:

Pollutant	lb/hour limit
PM	21.98
PM10	21.98
SO ₂	51.6
NO _x	55.1
CO	44.1

The VOC lb/hour limits are based on the AP-42 emission factor of 0.005 lb/MMBtu for natural gas resulting in a lb/hour limit of 0.6 lb/hr from stack #2.

C. Generator Emission Sources

MMC operates eight emergency diesel generators at the facility: one 135kW, one 250kW, one 300kW, two 450kW, two 460kW, and one 1250kW. Each generator is test fired for approximately ½ hour each week. BPT for these eight generators is the firing of diesel fuel with a sulfur content not to exceed 0.05% by weight.

D. The regulated pollutants emitted from the boilers and the generators are particulate matter (PM), particulate matter with a diameter smaller than ten microns (PM₁₀), sulfur dioxide (SO₂), nitrogen dioxides (NO_x), carbon monoxide (CO), and volatile organic compounds (VOC).

E. Annual Emission Restrictions

Fuel use shall not exceed 2,000,000 gallons/year of fuel oil with a sulfur content not to exceed 0.46% by weight, or 290,000,000scf of natural gas, or 290,000 MMBtu/year in any combination of the two. MMC shall also be restricted to the following annual emissions, based on a 12 month rolling total:

Total Allowable Annual Emission for the Facility
(used to calculate the annual license fee)

<u>Pollutant</u>	<u>Tons/Year</u>
PM	29.6
PM ₁₀	29.6
SO ₂	75.0
NO _x	86.2
CO	61.2
VOC	2.1

III.AMBIENT AIR QUALITY ANALYSIS

According to the Maine Regulations Chapter 115, the level of air quality analyses required for a renewal source shall be determined on a case-by case basis. Modeling and monitoring are not required for a renewal if the total emissions of any pollutant released do not exceed the following:

<u>Pollutant</u>	<u>Tons/Year</u>
PM	50
PM ₁₀	25
SO ₂	50
NO _x	100
CO	250

Modeling for MMC was previously completed for and can be found in license A-431-71-A-R.

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6

**Departmental
Findings of Fact and Order
Air Emission License**

ORDER

Based on the above Findings and subject to conditions listed below, the Department concludes that the emissions from this source:

- will receive Best Practical Treatment,
- will not violate applicable emission standards,
- will not violate applicable ambient air quality standards in conjunction with emissions from other sources.

The Department hereby grants Air Emission License A-431-71-G-M/R subject to the following conditions:

STANDARD CONDITIONS

- (1) Employees and authorized representatives of the Department shall be allowed access to the licensee's premises during business hours, or any time during which any emissions units are in operation, and at such other times as the Department deems necessary for the purpose of performing tests, collecting samples, conducting inspections, or examining and copying records relating to emissions (Title 38 MRSA §347-C).
- (2) The licensee shall acquire a new or amended air emission license prior to commencing construction of a modification, unless specifically provided for in Chapter 115.
- (3) Approval to construct shall become invalid if the source has not commenced construction within eighteen (18) months after receipt of such approval or if construction is discontinued for a period of eighteen (18) months or more. The Department may extend this time period upon a satisfactory showing that an extension is justified, but may condition such extension upon a review of either the control technology analysis or the ambient air quality standards analysis, or both.
- (4) The licensee shall establish and maintain a continuing program of best management practices for suppression of fugitive particulate matter during any period of construction, reconstruction, or operation which may result in fugitive dust, and shall submit a description of the program to the Department upon request.
- (5) The licensee shall pay the annual air emission license fee to the Department, calculated pursuant to Title 38 M.R.S.A. §353.

- (6) The license does not convey any property rights of any sort, or any exclusive privilege.
- (7) The licensee shall maintain and operate all emission units and air pollution systems required by the air emission license in a manner consistent with good air pollution control practice for minimizing emissions.
- (8) The licensee shall maintain sufficient records to accurately document compliance with emission standards and license conditions and shall maintain such records for a minimum of six (6) years. The records shall be submitted to the Department upon written request.
- (9) The licensee shall comply with all terms and conditions of the air emission license. The filing of an appeal by the licensee, the notification of planned changes or anticipated noncompliance by the licensee, or the filing of an application by the licensee for a renewal of a license or amendment shall not stay any condition of the license.
- (10) The licensee may not use as a defense in an enforcement action that the disruption, cessation, or reduction of licensed operations would have been necessary in order to maintain compliance with the conditions of the air emission license.
- (11) In accordance with the Department's air emission compliance test protocol and 40 CFR Part 60 or other method approved or required by the Department, the licensee shall:
 - (i) perform stack testing to demonstrate compliance with the applicable emission standards under circumstances representative of the facility's normal process and operating conditions:
 - a. within sixty (60) calendar days of receipt of a notification to test from the Department or EPA, if visible emissions, equipment operating parameters, staff inspection, air monitoring or other cause indicate to the Department that equipment may be operating out of compliance with emission standards or license conditions; or
 - b. pursuant to any other requirement of this license to perform stack testing.
 - (ii) install or make provisions to install test ports that meet the criteria of 40 CFR Part 60, Appendix A, and test platforms, if necessary, and other accommodations necessary to allow emission testing; and
 - (iii) submit a written report to the Department within thirty (30) days from date of test completion.

- (12) If the results of a stack test performed under circumstances representative of the facility's normal process and operating conditions indicate emissions in excess of the applicable standards, then:
- (i) within thirty (30) days following receipt of such test results, the licensee shall re-test the non-complying emission source under circumstances representative of the facility's normal process and operating conditions and in accordance with the Department's air emission compliance test protocol and 40 CFR Part 60 or other method approved or required by the Department; and
 - (ii) the days of violation shall be presumed to include the date of stack test and each and every day of operation thereafter until compliance is demonstrated under normal and representative process and operating conditions, except to the extent that the facility can prove to the satisfaction of the Department that there were intervening days during which no violation occurred or that the violation was not continuing in nature; and
 - (iii) the licensee may, upon the approval of the Department following the successful demonstration of compliance at alternative load conditions, operate under such alternative load conditions on an interim basis prior to a demonstration of compliance under normal and representative process and operating conditions.
- (13) Notwithstanding any other provisions in the State Implementation Plan approved by the EPA or Section 114(a) of the CAA, any credible evidence may be used for the purpose of establishing whether a person has violated or is in violation of any statute, regulation, or Part 70 license requirement.
- (14) The licensee shall maintain records of malfunctions, failures, downtime, and any other similar change in operation of air pollution control systems or the emissions unit itself that would affect emission and that is not consistent with the terms and conditions of the air emission license. The licensee shall notify the Department within two (2) days or the next state working day, whichever is later, of such occasions where such changes result in an increase of emissions. The licensee shall report all excess emissions in the units of the applicable emission limitation.
- (15) Upon written request from the Department, the licensee shall establish and maintain such records, make such reports, install, use and maintain such monitoring equipment, sample such emissions (in accordance with such methods, at such locations, at such intervals, and in such a manner as the Department shall prescribe), and provide other information as the Department may reasonably require to determine the licensee's compliance status.

SPECIFIC CONDITIONS

(16) Boiler Emissions

- A. Capacity shall not exceed 43.8 MMBtu/hr on Boiler #1. Capacity shall not exceed 25.0 MMBtu/hr on Boiler #2. Capacity shall not exceed 37.5 MMBtu/hr on Boiler #3. Capacity shall not exceed 25.1 MMBtu/hr on Boiler #4.
- B. Fuel use shall not exceed 2,000,000 gallons/yr of fuel oil with a sulfur content not to exceed 0.46% by weight, **or** 290,000,000scf of natural gas, **or** 290,000 MMBtu/yr in combination of the two. Fuel use records shall be maintained on a monthly basis, in addition to the 12 month rolling total.
- C. Combined emissions from Boilers #1 through #4 shall not exceed the following:

Pollutant	lb/hour limit
PM	21.98
PM10	21.98
SO2	51.6
NOx	55.08
CO	44.05
VOC	0.6

Compliance shall be demonstrated through stack testing in accordance with the appropriate method found in 40 CFR Part 60, Appendix A.

- D. PM emissions from boilers #1 through #3 shall not exceed 0.20 lb/MMBtu each and the emissions from boiler #4 shall not exceed 0.12 lb/MMBtu when firing fuel oil with a sulfur content not to exceed 0.46%. PM emissions from all boilers when firing natural gas shall not exceed 0.1 lb/MMBtu
- E. Visible emissions
When firing #6 fuel oil, visible emissions from Boilers #1 through #4 shall not exceed 30% opacity on a 6 minute block average, except for no more than 2 six minute block averages in a 3 hour period.
When firing all other fuel oils, visible emissions from Boilers #1 through #4 shall not exceed 20% opacity on a 6 minute block average, except for no more than 2 six minute block averages in a 3 hour period.
- F. MMC shall not exceed a combined heating input value of 110.1 MMBtu/hr at any given time for Boilers #1 through #4. Therefore the heat input for each boiler must be recorded every hour in accordance with condition (8) of this license.

G. Fuel use records must be kept documenting the fuel use and sulfur content.
Fuel receipts must be presented upon request by the department.

(17) Generator Emissions

MMC shall limit the generators to 500 hours/year each firing low sulfur diesel fuel with a maximum sulfur content not to exceed 0.05% by weight. The hourly limit will be limited by an hourly log or an hourly meter. MMC will limit emissions from each generator to the following:

A. Boiler Room Generator:

<u>POLLUTANT</u>	<u>lb/hr</u>
PM	0.58
PM ₁₀	0.58
SO ₂	0.15
NO _x	12.8
CO	2.8
VOC	1.0

B. Fire Pump Generator:

<u>POLLUTANT</u>	<u>lb/hr</u>
PM	0.26
PM ₁₀	0.26
SO ₂	0.07
NO _x	5.7
CO	1.2
VOC	0.46

C. Computer Room Generator:

<u>POLLUTANT</u>	<u>lb/hr</u>
PM	0.29
PM ₁₀	0.29
SO ₂	0.12
NO _x	10.6
CO	2.3
VOC	0.84

D. LL Bean Wing # 1 and # 2 Generators each shall not exceed the following:

<u>POLLUTANT</u>	<u>lb/MMBtu</u>	<u>lb/hr</u>
PM	0.12	0.54
PM ₁₀	-	0.54
SO ₂	-	0.23
NO _x	-	15.7
CO	-	3.7
VOC	-	0.45

E. NDF # 1 and # 2 Generators shall each not exceed the following:

<u>POLLUTANT</u>	<u>lb/MMBtu</u>	<u>lb/hr</u>
PM	0.20	0.88
PM ₁₀	-	0.88
SO ₂	-	0.22
NO _x	-	15.4
CO	-	3.6
VOC	-	0.44

F. Generator # 7

<u>POLLUTANT</u>	<u>lb/MMBtu</u>	<u>lb/hr</u>
PM	0.12	1.5
PM ₁₀	-	1.5
SO ₂	-	0.62
NO _x	-	51.4
CO	-	9.8
VOC	-	1.2

G. Visible Emissions

1. MMC shall not exceed 30% opacity from each generators' emissions, measured as 6 minute block averages, except for no more than two 6 minute block averages in a 3 hour period.

H. Daily fuel use records must be kept documenting the fuel use and sulfur content. Fuel receipts must be presented upon request by the department.

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A-431-71-G-M/R**

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12

**Departmental
Findings of Fact and Order
Air Emission License**

For Boiler # 4 only, MMC shall comply with the requirements of Federal New Source Performance Standards (NSPS) 40 CFR Part 60, Subparts Dc and shall comply with the notification and record keeping requirements of 40 CFR Part 60.48c with a copy of the fuel sulfur content reports to be sent to the Department quarterly.

MMC is required to send a semi-annual report to the EPA containing fuel oil use and sulfur content of the fuel for a Dc boiler (Boiler #4). All reports must be postmarked by the 30th day of the recording period. The address is:

US EPA Region I
Attn: Air Compliance Clerk
One Congress Street
Suite 1100 (MC SEA)
Boston, MA 02114-2023

(19) Annual Emission Statement

In accordance with MEDEP Chapter 137, the licensee shall annually report to the Department the information necessary to accurately update the State's emission inventory by means of:

- 1) A computer program and accompanying instructions supplied by the Department; **or**
- 2) A written emission statement containing the information required in MEDEP Chapter 137.

Reports and questions should be directed to:

Attn: Criteria Emission Inventory Coordinator
Maine DEP
Bureau of Air Quality
17 State House Station
Augusta, ME 04333-0017
Phone: (207) 287-2437

The emission statement must be submitted by September 1.

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CUMBERLAND COUNTY
PORTLAND, ME
A-431-71-G-M/R

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)
13

**Departmental
Findings of Fact and Order
Air Emission License**

(20) The term of this Order shall be for five (5) years from the signature below.

DONE AND DATED IN AUGUSTA, MAINE THIS DAY OF 2001.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: _____
MARTHA G. KIRKPATRICK, COMMISSIONER

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: 5/23/01

Date of application acceptance: 7/12yu/01

Date filed with the Board of Environmental Protection: _____

This Order prepared by Jaime Madore, Bureau of Air Quality